

HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF

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Causation of Beriberi.—An epidemic of beriberi at Diego-Suarez, in 1900, which included 180 cases, with 37 deaths, was observed by DE SCHUTTELAER (*Archives de médecine militaire*, 1901, p. 470), to whom it appeared that he had to do with a disease of alimentary origin. In a prior epidemic at the same place the addition of an ounce of fat to the day's allowance of food was followed by a rapid disappearance of the trouble, but in this case the same treatment failed to have any effect. The complete elimination of rice from the diet, however, and the substitution of army bread and ordinary bread ended the difficulty, excepting in the case of a number of Chinese laborers, who continued the use of rice, which was old, decorticated, and changed from the normal. Fresh, unhulled rice is believed by him to have no influence in producing the disease. He recommends the disuse of rice and the administration of fat as preventives. [In 1898 A. G. Vorderman, of the Dutch Colonial Medical Service, started the rice theory with the announcement that those who eat white rice are more likely to be seized than those who eat the red sort, in which the pericarp is retained. Inquiry showed that in jails where white rice was used 27.90 per cent. of the inmates were seized, against 0.09 per cent. of those of jails where the red was served. Where both sorts were eaten the ratio was 2.40 per cent. Eijkman has reported an epidemic of polyneuritis in fowls fed on white rice; they recovered when red rice was given. F. Grimm has pointed out that Europeans in Japan are immune so long as they adhere to European diet, and that the disease disappeared from the Japanese Navy when the ration was reconstructed on European lines, and from the Japanese penal institutions after reform in diet and in the preparation of the same. Manson believes that the improvement in the navy could have been no more than a coincidence, and that other hygienic reforms introduced about the same time had a favorable influence. He cites an epidemic in Singapore jail which affected only the male prisoners, whose quarters were damp, while the women, whose quarters were dry, were untouched, in spite of the fact that their food and drink were the same. —C. H.]

Coincidence in the Appearance of Anopheles and of Malaria.—A. BILLET, of the French Army (*Comptes rendus de l'Académie des Sciences*, 1901), observed that the mosquitoes which were first to appear in the vicinity of Constantine toward the end of May, at which time there were no cases of malaria, were all of the genus *Culex*. Not even in the larval state did he find a single *Anopheles*. Toward the middle of June he began to find them,

however, and in a number which contained human blood he observed the sporocysts and the characteristic sporozoites of malaria. At about the same time cases of malaria began to present themselves at the hospital from the localities where the *Anopheles* had been found. [The question arises, If there were no antecedent cases, how did the *Anopheles* become infected? On this point the experience of the younger Manson, recently deceased, is of interest.

In September, 1900, he allowed himself to be bitten in London by infected mosquitoes brought from Italy, and had an attack of benign tertian. The presence of the parasites in his blood was demonstrated in the usual manner. Recovery under quinine was rapid, and he remained in his normal condition of health until May 30, 1901, when he began to be ill, and then had two paroxysms of tertian fever. Examination of the blood again demonstrated the malarial parasite.—C. H.]

Neutral Red as a Means of Detecting *Bacillus Coli* in Water.—Several investigators have found that media containing neutral red are changed in color to canary yellow by *B. coli communis*, but not by *B. typhosus*. The reaction was found to be constant in an investigation of a large number of races of the organism, but it was shown also that it is brought about by certain other bacteria, including *B. tetani*, *B. œdematis maligni*, *B. anthracis symptomatici*, and *B. enteritidis*. Most of the aerobic pathogenic bacteria were tested with negative results. In order to ascertain whether the reaction affords a rapid means of detecting *B. coli* in water and of estimating the number present, R. H. MÆGILL (*Journal of Hygiene*, October, 1901, p. 430) undertook a series of experiments, which led to the conclusion that a water producing a typical canary yellow in neutral red media within forty-eight hours in bouillon, and accompanied in glucose-agar by green fluorescence and gas formation, may be considered to contain *B. coli*. He found that *B. tetani* and *B. œdematis maligni* produce the same appearance as *B. coli* in glucose-agar, even when the surface of the medium is exposed to the air, but in the bouillon the anaerobes produce the reaction only when oxygen is excluded. *B. mesentericus* was found to change the red to a dull orange both in bouillon and in glucose-agar.

In bouillon a reaction could be obtained in every instance within twenty-four hours, even with dilutions containing from one to five organisms per cubic centimetres. In extreme dilutions the reaction did not extend to the surface of the fluid in twenty-four hours, and the lower portions had a more orange tint than when the organism was plentiful. With numerous bacilli present the reaction occurred within twelve hours.

W. G. SAVAGE (*Ibid.*, p. 437) finds that it is not a matter of indifference what strength of glucose and of neutral red is used, for if an excessive amount be added it may not be reduced. To determine whether if *B. coli* is present, it will always give the reaction, and whether it is the only organism which, under the conditions of the test will give the reaction, he instituted a series of experiments which led to the conclusion that, while a positive reaction is not absolutely diagnostic of *B. coli*, in the vast majority of cases it points to its presence; that while a negative reaction does not absolutely exclude the

organism, it makes its presence highly improbable; that the test is very easy of application, and is of great value in the routine examination of water.

Growth of Bacteria through Porcelain Filters.—It is generally accepted that ordinary water bacteria can grow through the lacunar spaces of porcelain filters in a few days' time, but that the pathogenic species, which gain access through sewage contamination, cannot multiply, because of the absence of conditions essential to growth. Some observers have held that the chief obstacle is a lack of suitable nutrient material, and that the addition of broth will remove it. Contradictory results published by a number of investigators led Major W. H. HORROCKS (*British Medical Journal*, June 15, 1901, p. 1471) to reinvestigate the subject, using Chamberland-Pasteur and Berkefeld candles. Broth, sterilized sewage, sterilized diluted sewage, sterilized ditch water, and sterilized drinking water, all inoculated with the bacillus of typhoid fever, were used in making the tests. With the Berkefeld candles the results were uniformly positive, the organisms appearing as early as the fifth day and at latest on the eleventh. The candles used were cleaned by brushing or by boiling, and then further tested. The one cleaned by brushing yielded the bacillus; the other, as was to be expected, did not. The same tests made with the Chamberland-Pasteur candles gave negative results in every case, even after three weeks. The difference in the two sets of results is attributed to the larger size of the lacunar spaces and to the consequently diminished immobilizing and devitalizing influences. The Pasteur filter, with proper care to prevent passage through flaws or imperfections, ought, therefore, to give perfect protection against water-borne typhoid, but the Berkefeld should be sterilized in boiling water at intervals of three days in order that the bacteria which have already penetrated shall be destroyed.

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PARATYPHOID FEVER; REPORT OF FOUR CASES; ANALYSIS
OF ALL REPORTED CASES.

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DURING the fall of 1901 four cases of paratyphoid fever occurred in the medical wards of the Johns Hopkins Hospital, in Baltimore. In two of these cases a paratyphoid bacillus was isolated in pure culture from the blood, and in two the diagnosis was made upon the ability of the patients' sera to agglutinate Gwyn's "paracolon" bacillus and the organisms isolated from the other two cases. In all four cases the Vidal reaction was negative. Gwyn's case, including the temperature chart, which has not been published, is again reported.

DR. GWYN'S CASE.—Louis S., white, male, aged twenty-eight years, carpenter; Baltimore. Admitted October 11, 1897, complaining of fever.

Family History. Unimportant.

Previous History. Unimportant; has been living in Baltimore for the past six years. No similar illness in the neighborhood.

Present Illness. Began September 17th, with sensation of cold, pain in the abdomen, fever and thirst. No epistaxis, bowels constipated the first week. Past two weeks had diarrhoea and continued pain in the abdomen. October 10th, had greenish, watery stool every fifteen to twenty minutes.

Examination. Pale, ill-looking man; eyes sunken, somewhat excited, and talkative. Tongue moist and coated, respiration labored. Breath sounds clear, tubular modification. Heart not enlarged. Sounds clear. Pulse rapid, low tension, dicrotic. Abdomen flat and natural looking. Recti muscles slightly tense. Respiratory movements principally in the epigastric region. General abdominal tender-